

Amendment to the Claims

1-17. (Cancelled)

18. (New) A discharge device for discharging elongated products each having one end that is larger in size than the other end, the discharge device comprising:

a hopper having an opening portion at a bottom portion thereof;

a driving mechanism for swaying the hopper about a rotation center axis, wherein the opening portion of the hopper extends in a direction of the rotation center axis; and

a bottom cover closing the opening portion of the hopper so that rod-like products do not escape therefrom, wherein

the bottom cover has an upper surface closing the opening portion of the hopper and a slit extending in a direction perpendicular to a direction of the swaying motion of the hopper so as to be open in the upper surface,

the bottom cover is profiled so that the elongated products cannot escape from the opening portion of the hopper,

the slit has a width that allows all but the maximum outer size portion of the elongated products to pass therethrough, and

the driving mechanism is operable to sway the hopper so that the opening portion of the hopper moves along the upper surface of the bottom cover to thereby guide the elongated products, accommodated in the hopper, into the slit of the bottom cover.

19. (New) The discharge device according to claim 18, further comprising a vibrator for vibrating the bottom cover, wherein the bottom cover is vibrated to discharge the elongated products from the slit.

20. (New) The discharge device according to claim 18, wherein the upper surface of the bottom cover takes a profile in conformity with a circular arc so that the elongated products do not escape from the opening portion of the hopper.

21. (New) The discharge device according to claim 18, wherein the hopper has a flat bottom plate.

22. (New) The discharge device according to claim 18, wherein the hopper has a bottom plate that is inclined toward the opening portion.

23. (New) The discharge device according to claim 18, wherein the opening portion of the hopper has a width that is narrower than a bottom portion of the hopper.

24. (New) The discharge device according to claim 18, wherein the swaying motion of the hopper has a maximum inclination angle in the range of from 5 to 60 degrees.

25. (New) The discharge device according to claim 18, wherein the swaying motion of the hopper defines a sway cycle in the range of 0.5 to 10 sec.

26. (New) The discharge device according to claim 18, further comprising elastic bodies fixed at the opening portion of the hopper so as to be close to the bottom cover.

27. (New) The discharge device according to claim 18, further comprising elastic bodies fixed at the opening portion of the hopper and each of the elastic bodies has a width so that end edges thereof are close to the slit when the hopper is inclined.

28. (New) The discharge device according to claim 18, wherein the elongated products are pipet tips and each of the pipet tips includes a flange,

the discharge device further comprising a removal arm for catching and pulling off one of the pipet tips from the slit, the removal arm being operable to engage the flange of the pipet tip when stacked on a lower one of the pipet tips.

29. (New) The discharge device according to claim 28, further comprising an inclination mechanism for inclining the removal arm, wherein the inclination mechanism includes permanent magnets fixed to opposing portions of the hopper and the removal arm.

30. (New) The discharge device according to claim 28, wherein the bottom cover forms an upward inclined slit capable of catching the flange of a pipet tip that is stacked on another pipet tip while being moved in the slit of the bottom cover and raising the stacked pipet tip,

wherein the upward inclined slit is inclined at an upward gradient in a moving direction of the pipet tips, and a fore end of the removal arm is provided at the upward inclined slit, and thereby the removal arm is capable of removing the stacked pipet tip as it is moved along the upward inclined slit.

31. (New) The discharge device according to claim 30, wherein the upward inclined slit forms a clearance through which the flange of a pipet tip, at the lowest level, can pass between a front end of the upward inclined slit and the bottom cover, the clearance being narrower than twice a thickness of the flange of the pipet tip.

32. (New) The discharge device according to claim 29, wherein the bottom cover forms an upward inclined slit for catching the flange of a pipet tip stacked on a lower pipet tip in the slit of the bottom cover and raising the stacked pipet tip,

wherein the upward inclined slit is inclined at an upward gradient in a moving direction of the pipet tips, and a front end of the removal arm is provided at the upward inclined slit, and thereby the removal arm is capable of removing the stacked pipet tip as it is moved along the upward inclined slit.

33. (New) A discharge device for elongated products each having one end that is larger in size than the other end, the discharge device comprising:

a hopper having an opening portion in a bottom portion thereof;

a driving mechanism for swaying the hopper about a rotation center axis, wherein

the opening portion extends along a direction of the rotation center axis;

a bottom cover closing the opening portion of the hopper so that the elongated products do not escape therefrom; and

inclination plates connected at the opening portion of the hopper such that end edges of the inclination plates are positioned close to an upper surface of the bottom cover; wherein

the upper surface of the bottom cover closes the opening portion of the hopper and the upper surface is profiled so that the elongated products cannot escape from the opening portion of the hopper and a slit is formed in the upper surface so as to extend in a direction perpendicular to a direction of the swaying motion of the hopper,

the slit is sized to permit all but the maximum outer size portion of the elongated products to pass therethrough, and

the driving mechanism is operable to sway the hopper so that the opening portion of the hopper moves along the upper surface of the bottom cover to thereby guide the elongated products from the hopper into the slit of the bottom cover.

34. (New) The discharge device according to claim 33, further comprising elastic members connected to the inclination plates so that the end edges of the inclination plates are biased into contact with the bottom cover.